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spear." It is manifestly unfitted for such use, but this statement goes to show that it was an unfamiliar weapon among the people by whom he was surrounded. The natives of that region, as well as the Greenlanders and Eastern Eskimos, retrieve seals with the kaiak, occasionally using the stabbing harpoon common to the whole Eskimo race, to secure a seal, but they are unprovided with any special weapon for retrieving.

We were unable, during our stay at Point Barrow, to ascertain whether this weapon was in use before the introduction of fire-arms, which are now universally employed, but I am strongly led to conjecture that it is a modern invention.

I am of the opinion that the people of this limited area, enabled by the introduction of firearms to kill seals in the open holes of water, where they had previously been safe from the ordinary spear, and prevented from using the kaiak from the extreme roughness of the ice, invented this weapon by reducing the great walrus-harpoon to a convenient size for carrying on the ice. It is a perfect miniature of the walrus-harpoon, with the addition of the ice-pick, an essential part of the ordinary stabbing-harpoon.

I am strengthened in this opinion by the fact that Dr. Simpson, who spent the winters of 1852–3 and 1853–4 at Point Barrow, before the general introduction of firearms, makes no mention of the use of this weapon in his excellent paper on the Western Eskimos. He would undoubtedly have done so had he seen it, so different is it from the ordinary Eskimo methods of seal-hunting.—*John Murdoch.*

MICROSCOPY.[1]

La Biologie Cellulaire.—The first number of a comprehensive treatise on general cytology, bearing the above title, has just been published. Two more numbers are to follow, which will make a large octavo volume of seven or eight hundred pages, illustrated with over four hundred cuts. The price of the first number is twelve francs, while the subscription price of the complete work is twenty-five francs. It may be obtained from H. Engelcke, 24 Rue de l' Université de Gand, Belgium.

The author, J. B. Carnoy, professor of general biology in the Université Catholique of Louvain, has undertaken a comparative study of the cell in both kingdoms, and proposes to make the treatment of the subject as complete and thorough as possible in the present state of our knowledge.

Our notions of the cell have been clearing rapidly in recent years; and, although we are still far from a complete knowledge of this many-sided subject, the time seems to have arrived when cytology may properly be recognized as an independent branch of learning, as it has been for some years in the university of

[1] Edited by Dr. C. O. Whitman, Mus. Comp. Zool., Cambridge, Mass.

Louvain. The key to some of the deepest mysteries of life, is to be found, if at all, in the study of the cell; and for this and other reasons that do not call for mention, we are glad to see the subject treated as a science, and not in the narrow methods of a mere historical compendium.

The work is intended for *laboratory use.* "*It is needless to remark*," says the author, "*that no lesson in cytology can be mastered outside of the microscopical laboratory.*" Its aim is to furnish the student with a proper foundation for the study of life in any of its aspects, and both student and teacher with a guide to the most favorable objects of study, and the best instruments and methods now in use.

Thus stated, the chief aim of the work would seem to be nearly identical with that of the well-known Practical Biology; but the subject-matter and the method of dealing with it are quite unlike in the two cases. Huxley's course deals with the morphology and physiology of a few typical vegetable and animal organisms; Carnoy's course deals with the chemistry as well as the morphology and physiology of the cell, as the structural unit of all organisms. The one makes use of both macroscopical and microscopical methods of observation; the other employs almost exclusively methods of microscopical technique. The Practical Biology pursues methods of its own, and aims to impart, through laboratory work, such information as should form a part of so-called general education; the Cellular Biology limiting itself to a single subject of general and fundamental importance, proposes to deal with it in an encyclopedic fashion and thus to lay a broad and solid foundation for special study in botany, zoölogy, or physiology. The former points out the direct way to a system of facts, and deals very sparingly in interpretation; the latter adds to its facts and methods, history, discussion, and general interpretation. The English manual is an excellent guide for the general student, who merely desires some knowledge of typical organisms; but the training it offers, though admirable as far as it goes, falls short, in some important particulars, of being an adequate preparation for original investigation in either of the above-named departments of biology. The French manual, if completed with the thoroughness that characterizes the first number, will furnish, in our opinion, not only a much-needed book of reference, but also a course of study which exactly meets the needs of those who are preparing for independent work.

The general scope of the work may be seen from the following introductory remarks by its author: "A course in general cytology should embrace the study of both the animal and vegetable cell. * * * The essential characters of organization, and the fundamental biological laws, are the same for all living beings. * * * It is only after having searched the two kingdoms, after having followed the organized element step by step, and through

the entire series of living forms, that it becomes possible to gain a conception of it, which can be called exact, truly scientific and fruitful.

"Cytological instruction should be *complete* and *searching*. In order to be complete, it should survey the cell from all sides, from the standpoint of morphology, anatomy, physiology and biochemistry; for it is under these several aspects that it will serve as a basis for subsequent study. In saying that it should be searching, we should take care to demand that it be encyclopedic; a course which loses itself in details would not be thorough. What we desire is, that the student shall be made to penetrate into the inner life of the cell, and actually to lay hold of both the essential and accidental chemical constitution of living matter, the fundamental organic constitution of different parts of the cell—membrane, protoplasm, nucleus; to reflect long upon the principal physiological phenomena—indispensable foods, elaboration, digestion, assimilation, &c.; upon the general movements of the cell—cleavage, fecundation, different movements of the protoplasmic reticulum; upon differentiation, cellular geotropism and heliotropism," &c., &c.

The first part of this first number of the work containing 167 pages, is devoted to the instruments and methods of microscopical research. The first of the three books into which it is subdivided, treats of the microscope and its accessories, the microspectroscope, polarizing apparatus, the micrometer, goniometer, photographic apparatus, and camera lucida; and closes with a chapter on the laboratory, aquaria, and reagents.

The second book considers the objects or materials of study, and the methods of preparation, including the microtome and its uses.

The third book devotes one chapter to "the education of the eye," another to "the examination and treatment of preparations," and a third to "the method to be pursued in scientific researches and publications."

The second part opens with a valuable historical preliminary, and a discussion of general notions of the cell, including terminology and definitions. Then follows a book of sixty-five pages devoted to the *nucleus*—its chemical constitution, structure, and morphography. The remaining three books of this part, dealing with *protoplasm*, the *cell-membrane* and *general discussions*, will appear in the second number.

The historical summaries, and well-arranged bibliographical references, form a very valuable feature of the work; and the same may be said of the chapters devoted to methods of research, which contain much that is new. The cuts are *all* original. They are well executed, and for the most part well chosen; but this is a point in which originality might have been curtailed and well selected illustrations borrowed from different sources.

Professor Carnoy has undertaken an extremely difficult task, and the success with which he has accomplished the first part is a sufficient guaranty of an equally successful conclusion. The best that we can wish for it is, that it may meet with a reception as favorable as it deserves.

PERGENS'S PICROCARMINE.[1]—I. 1. Boil for two and a half hours 500 grms. pulverized cochineal in thirty liters of water.

2. Add fifty grms. *potassic nitrate*, and, after a moment of boiling, sixty grms. *oxalate of potash;* boil fifteen minutes.

3. After cooling, the carmine settles: it is washed several times with distilled water in the course of three or four weeks.

II. 4. Pour a mixture of one volume of ammonia with four volumes of water upon the carmine, taking care that the carmine remain in excess.

5. After two days filter, and leave the filtered solution exposed to the air until a precipitate forms.

6. Filter again, and add a concentrated solution of picric acid; agitate, and then allow it to stand twenty-four hours.

7. Filter, and add one gram chloral for one litre of the liquid.

8. At the end of eight days, separate the liquid from the slight precipitate which is formed, and it is ready for use.

This fluid keeps unchanged for at least two years, and is recommended by Carnoy above other picrocarmine solutions.

PROCEEDINGS OF THE AMERICAN SOCIETY OF MICROSCOPISTS.[2]—The seventh volume of the Proceedings of the American Society of Microscopists contains, besides President Cox's address on Robert B. Tolles, about forty articles, some of which contain valuable information for the microscopist. We may call especial attention to the articles on Photomicrography by the President and H. F. Atwood; the observations of the editor in chief, Dr. D. S. Kellicott, on Infusoria, Rotatoria, &c.; thoughts on Sponges by Henry Mills; a new mounting medium by H. L. Smith; serial sections by S. H. Gage; hints on hardening, imbedding, cutting, &c., by Geo. Duffield; a cover-glass cleaner by T. L. James; the ideal slide by F. M. Hamlin; the magnifying power of objectives and lenses by W. H. Bulloch; a method of staining and mounting by J. T. Brownell; a lens holder by R. H. Ward; an improvement in objectives by Ernst Gundlach. The volume contains other articles of more or less interest, report of committee on standard micrometer, and on oculars.

JOURNAL OF THE NEW YORK MICROSCOPICAL SOCIETY.—The first number of this new microscopical journal contains an interesting article on Electrical Illumination in Microscopy, by E. A. Schultze; and another entitled Criticisms on Mr. J. Krutt-

[1] Biologie Cellulaire, by J. B. Carnoy, p. 92, 1884.

[2] Seventh Annual Meeting, held at Rochester, N. Y., Aug. 19–22, 1884.

schnitt's Papers and Preparations relating to Pollen-tubes, by N. L. Britton. The rest of the number is given to the Proceedings of the Society, Miscellanea, and an Index to Articles of Interest to Microscopists.

In the meeting of December 5th, J. D. Hyatt speaks of Hydrogen Peroxide as a Bleaching Agent, but gives no details of the process.

This journal is edited by Benjamin Braman, and is to be published in nine monthly numbers, from November to July, inclusive.

METHOD OF MAKING ABSOLUTE ALCOHOL.—Dr. Sharp states that absolute alcohol is prepared in Ranvier's laboratory by adding anhydrous cupric sulphate to ninety-five per cent alcohol.[1]

Pulverized cupric sulphate is heated to red heat in order to drive off the water of crystallization; when cool the white powder is placed in a wide-mouthed bottle, holding about a liter, and three-fourths full of alcohol. The bottle is quickly closed and the whole shaken. After standing a day or more—with occasional shakings—it is decanted and the operation repeated, especially if the cupric sulphate shows much of the blue color due to the reassumption of water.

As a test a drop of the alcohol thus dehydrated may be mixed with a drop of turpentine on a glass slide, and examined under the microscope; if no particles of water are to be seen the alcohol is absolute enough for all practical purposes.

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SCIENTIFIC NEWS.

—Mr. J. Dillon forwarded a paper to the Montreal meeting of the British Associations on an automatic sounder for the use of the explorer, in determining depths in rivers and lakes, and the character of the bottom. Over the side of the vessel is a long sounding bar or tube, in length 10½ feet, or more, which bar works freely round a fixed center inside the boat. This fixed center is placed in the middle of a circular dial on which are marked fathoms or feet, a duplicate dial being placed in the captain's cabin. On mooring the boat over a shoal rising to the surface, the sounding bar, which always hangs vertically, will strike the shoal from its weight. The bar will run along the ground, pointing to the number of feet on the dial, representing the depths of the shoal under the surface of the water. It has been found that the vibrations of the sounding bar differ in degree when the boat moves it along different formations, thus enabling the observer, after very short experience, to record in his note-

[1] Roscoe and Schorlemmer state that anhydrous cupric sulphate is a good test for the presence of water, but not a suitable means for preparing absolute alcohol.